# The DRILLER

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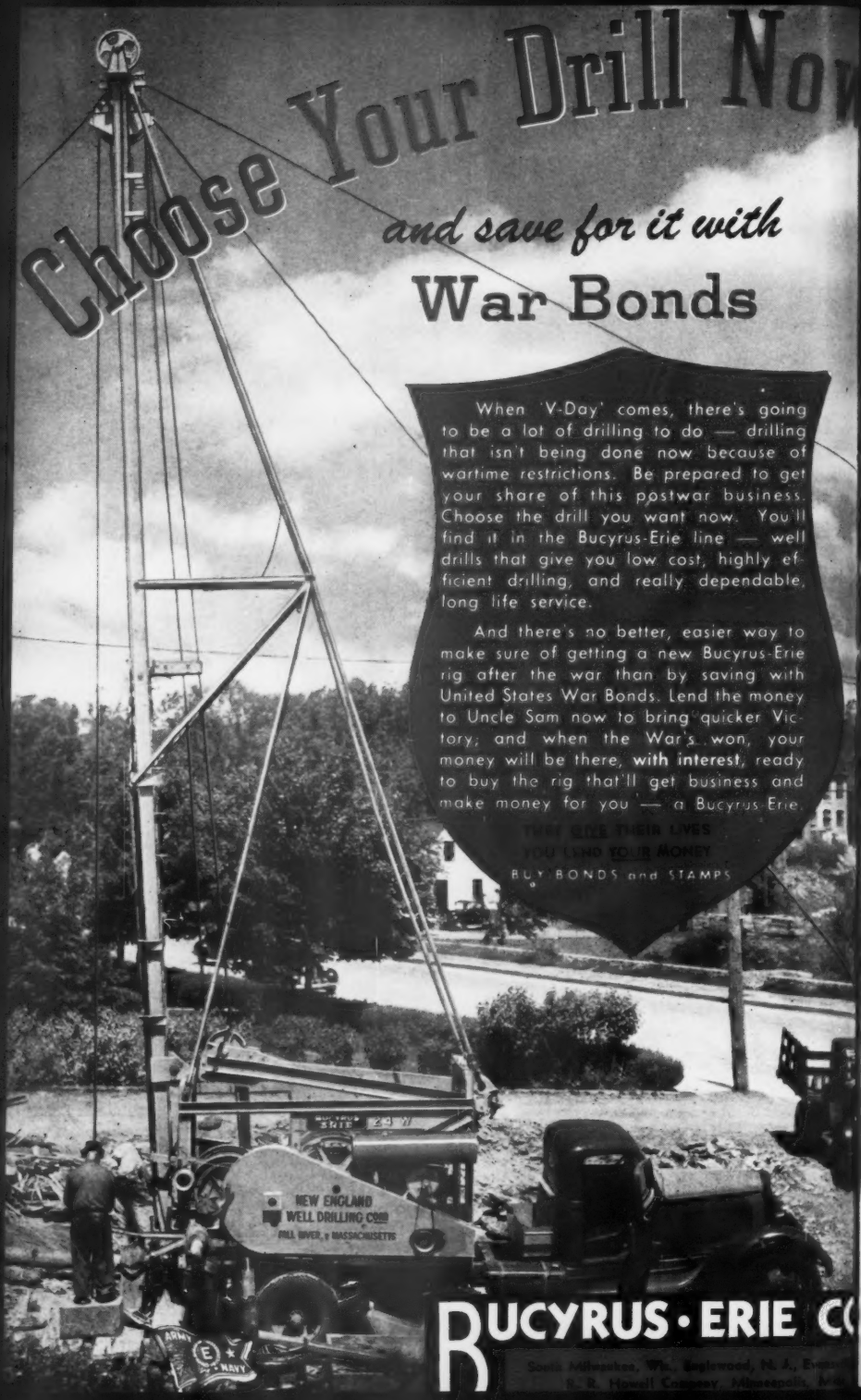
VOLUME 18 JULY, 1944 NUMBER 7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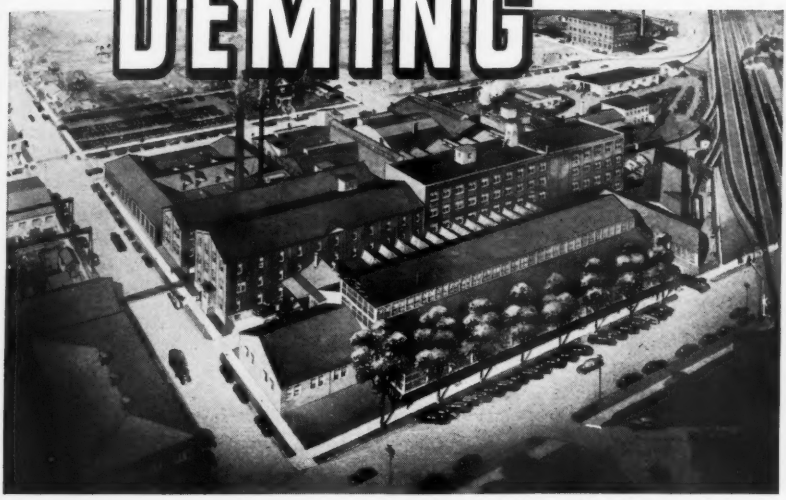

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# The Mastrians Drive Piles With Well Rig

• (Circle) Here's a close-up of the guide the Mastrians constructed and attached to the drill derrick to permit the pile driving hammer to do its job. (Below) The piles were timbers which were driven through the ice and water into the lake bottom to form the foundation for a boat house.

HAD you been in the vicinity Solon Springs, Wisconsin, in January 1941, you might have seen a well rig driving pilings with an 1850-pound hammer. The rig would have been the property of Mastrian Brothers of Wentworth, Wisconsin, and the job their most unusual one.

The Mastrians had taken this job of driving timber pilings for a boat house near Solon Springs, Wisconsin, after they had figured a way to convert their Bucyrus-Erie 22-W into

**Pile driving with a drilling rig and drilling for the Alcan highway are among the experiences of these drillers of the Lake Superior region — Mastrian Brothers of Wentworth, Wisconsin**

• (Above) This job was a 197-foot, 4-inch well for an Alcan highway construction crew camp, drilled by the Mastrians in 1942. (Right) Another Alcan job, this one was a 6-incher, finished at 300 feet, for a hospital camp. At the right (in robe) is a patient at the hospital. Pat Mastrian is shown leaning on the drill. Behind him is an unidentified soldier.

a pile driver. They accomplished the conversion by attaching to the derrick a guide made of steel angle irons. The hammer was attached to the drill line and allowed to drop in the guide onto a cap weighing 750 pounds set above the piling.

With this arrangement, the Mastrians were able to drive the pilings without trouble — unless you consider a near mishap as trouble. The rig had been set up on the ice of the lake on which the boat house was to be built. After four days of operation, one of those "January thaw" nights came along—with the result that in the morning the rig was standing in 8 inches of water, which had collected on the ice.

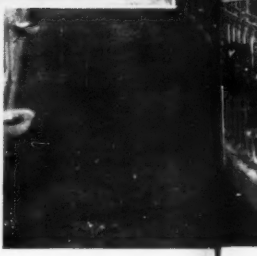
The Mastrians moved the rig on shore in a hurry when they saw that, and fortunately the following night brought weather more typical of January. The ice again froze solid; the Mastrians moved the rig back on the job, and finished driving the last piling that day.

The driving was done through 10 feet of lake sand and silt, followed by about five feet of hard pan, and then sand again. The pilings were driven to a point where the tops protruded only three feet above the level of the ice. At its deepest point, the water into which the pilings were driven was about 6 feet deep.

The Mastrian Brothers are Martin and Pat, and their business dates back as far as 1915 when Martin

*(Continued on page 18)*

# More Milk — *from*



• Here are two interior views of modern barns equipped with drinking cups and running water systems. Barns like these will be more numerous after the war — and that means more wells.

DAIRY cows that have plenty of fresh water to drink will yield anywhere from 2½% to about 25% more milk!

These figures aren't spun from whole cloth. They represent the "spread" of conclusions drawn from representative research studies on the subject. The United States Department of Agriculture and almost every state agricultural division, as well as other groups, have studied the benefits of free access water supply in terms of increased milk and butterfat yields—with results showing increases in varying degree.

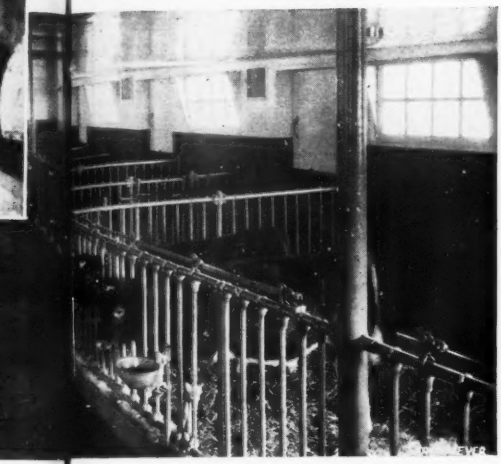
An independent study of a herd of some 23 Jersey cows showed that after installation of a running water system, the six-month production of milk increased from 12,511 pounds to 15,628 pounds—a 24% increase. Another study showed a 28% increase. These studies represent about the maximum in increases noted. Other researches also have revealed stepped up milk production with free-access water—but somewhat less sensationally.

At Iowa state college in an experiment at the college barns, results of research brought this conclusion: Dairy cows watered by means of water bowls drank approximately 18% more water and yielded 3.5% more milk and 10.7% more butterfat than cows that were watered twice a day at an outside tank. At the Connecticut agricultural station, cows watered with drinking bowls produced 3.5% to 4% more milk than those allowed to drink only twice daily.

The New Jersey State College of Agriculture reports that experiments

# on Wells

**The advantages of running water on dairy farms are clearly shown in a number of surveys. Here's ammunition for well sales, now and post-war.**



have shown that cows watered in bowls produce 3.5% to 4% more milk than cows watered only twice a day, and 6% to 11% more than those watered but once a day.

And so on, through numerous studies by other groups—with the results confirming, unmistakably, the assertion that when cows are allowed to drink freely of good, fresh water, their milk production jumps.

It's easy to understand in terms of a dairy cow's physiology. A heavy producing dairy cow needs as much as twelve pails of water every 24 hours to keep her milk production at its best. The animal's body is from 70 to 80% water. Water has the job of carrying digested food materials into the body, transporting waste materials away from the body, controlling body temperature through evaporation on the skin—and the milk it gives is about 87% water. No wonder it needs so much water to drink!

The dairy cow in milk ranks at the head of the list of all farm animals when it comes to water requirements in proportion to size. Professor F. B. Morrison in "Feeds and Feeding" says that from 12½ to 15 gallons of water per cow daily can be considered an average amount for a herd including both cows in milk and dry cows.

In order to produce a pound of milk, a cow has to consume anywhere from three to 5½ pounds of water. It gets some water from its feed, but a large part must be taken in as drinking water.

The water supply for dairy cows must be readily accessible for the cows in order to be effective in keeping their milk production at peak, for the gains in milk and butterfat yield are attributed to the fact that cows could take drinks whenever they wanted them. Thus, running water to which the cow has free access appears to be the key to increased milk production.

Automatic drinking cups are the most satisfactory method of watering cows. They increase milk production, save time and labor, and protect the health of cattle by insuring them a more sanitary supply of water. Economy of labor and time is assured because there is no necessity for turning the cows loose for the purpose of watering them. Each cow has its own individual drinking cup which is usually built in such a way that the animal opens a valve by pressing her nose into the bowl. This valve allows the water to run

*(Continued on page 21)*

# The DRILLER

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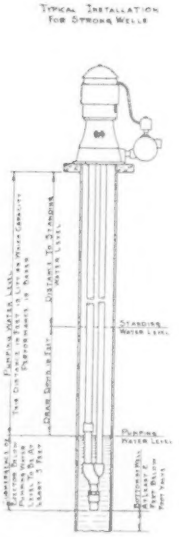
## Variation In Water Storage

GROUND water storage in areas unaffected by heavy pumping increased generally in the Eastern and Central states and decreased in the West, according to the April Water Resources Review of the United States Department of Interior, Geological Survey. Heavy April rains produced exceptional recharge especially in the interior and Gulf Coast States. Storage remained low, however, in Southwestern New Mexico, Southeastern Arizona and Southern Nevada. Despite heavy demands in Southern California the supply for irrigation wells is ample owing to hold-over storage.

## Myers Releases Hints On Ejector Assemblies

DOES the water level in the well or the location of the ejector assembly determine capacity? This question is asked quite frequently.

The answer, according to a recent release by F. E. Myers and Bro. company, is that the pumping level rather than the location of the ejector assembly is the determining factor. Manufacturer's performance tables accurately record the tested capacity of the pump and water system at given well lifts, which means distance to water level when pumping.




If the ejector assembly is, say, twenty-five feet or more below the pumping level, or a tail pipe is used, there may be a small loss in capacity because of increased pipe friction. If

*(Continued on page 20)*

# COOK Vertical Foot Valve

## Heavy-Duty, Threaded for Suction Pipe in a "Drop-Pipe" System of Well

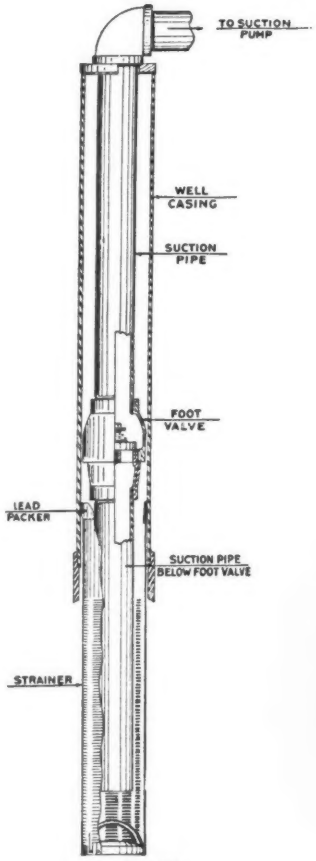


Fig. 1001

Figure 1001 shows Foot Valve suspended on a suction pipe.

Figure 251A is a quiet, positive, quick-closing foot valve—the seat is bronze and the poppet is a special composition rubber; sizes 3" to 15"; also furnished for direct suction wells.

*Write for bulletin LFB-100*

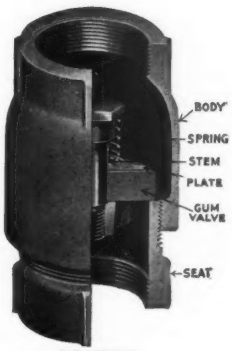


FIG. N°251A

GENUINE COOK WELL SUPPLIES
REG. U.S. PAT. OFF.

**A. D. COOK, Inc.**
LAWRENCEBURG - INDIANA

DEEP-WELL COOK PUMPS
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# NEWS OF THE MONTH

## Bush Elected Iowa Head

JOHN BUSH, Plover, Iowa, was elected president of the Iowa Well Drillers Association at the one-day conference held in Des Moines April 14. Jess Devaul, Havelock, was chosen vice-president and Hubert Landgraf, Dubuque, was re-elected secretary and treasurer.

Attendance at the meeting, which emphasized current drilling problems, was very good despite the transportation difficulties of wartime. The conference was closed with a dinner and floor show.

## Sanford Addresses Jersey Drillers

AN address by J. Homer Sanford featured the June 1st dinner meeting of the New Jersey Water Well Contractors Association held at the Robert Treat Hotel, Newark.

Speaking on the subject of "Practical Application of Geology to Drilling Operations," Sanford pointed out the benefits to be gained through organized cooperation. He also stressed the necessity for the keeping of complete well logs by drillers. The same point was stressed by Meredith E. Johnson, Assistant State Geologist, who also pointed out that there is great necessity for drillers keeping samples on all wells drilled.

Other speakers were James C. Harding, Commissioner of Public Works, Westchester County; J. Arthur Carr, Water Department Superintendent of Ridgewood, New Jersey.

Held for the purpose of reorganizing New Jersey well drillers, the meeting was marked by excellent attendance. The interest shown points toward a strong organization, observers felt.

## Frazier Appointed Peerless Manager

PRESIDENT PAUL L. DAVIES of Food Machinery Corporation recently announced the appointment of Vice-President Clarence Frazier as manager of the Peerless Pump Division of the firm. Mr. Frazier succeeds the late Vernon Edler.

The new Peerless manager will have his headquarters in Los Angeles. Other branches of the division are located at Fresno, Calif., and Canton, Ohio.

At 41 years of age, Mr. Frazier is one of the youngest executives to manage war plants that are producing vitally needed materiel.

## 'Easier To Get Water System'. Carloss Says

HAND PUMPS and electric water systems are becoming increasingly available for farm and essential civilian needs, according to a recent radio address given by H. E. Carloss, Sales Mgr., The Deming Co.

Last year a government Limitation Order acknowledged the needs for farm pumps and water systems, permitting the manufacture of, and providing materials for approximately 60 to 70% of the number of farm pumps and water systems produced

in 1941, and for non-farm installations bearing a priority rating of AA-4 or better, Carloss pointed out.

Further, manufacturers were permitted to produce for farm use, 64% of the number of centrifugal and deep well turbine pumps produced in 1941. The effect of this order is now showing some results, Carloss said.

A new schedule of the order, effective July 1, 1944, has been issued, providing the materials and permitting the manufacturing of more pumps and water systems than allowed under the old schedule, as well as approximately 100% of 1941 production in centrifugal and deep well turbine pumps, Carloss pointed out.

Although rationing certificates for pumps or water systems are still required, pump repairs and replacements can be furnished without limitation, he said.

## Introduce New Tachometer

A NEW electrical tachometer for speed measuring requirements is being introduced to industry.

By special calibrations on the scale of the indicator, units of miles per hour—revolutions per minute—feet per minute — frames per second — gallons per hour—pounds per minute—and any other unit of measure can be quickly read. These direct readings from the scale eliminate the necessity of using conversion tables or charts.

The readings on the indicating scale are guaranteed within ½ of 1% of the full scale. Each tachometer is tested and calibrated with exacting accuracy before shipment.

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# The Driller & The Law

## Abandonment Of Drilling

TWO questions of fundamental importance to drilling contractors are raised and answered in a very recent Oklahoma Supreme Court case involving the drilling of an oil and gas test well. (*Smith* v. *Kions,* 147 Pac. 2d 442). The legal principles apply to water well drilling agreements as much as they do to undertakings of the exact nature involved in the Oklahoma decision.

The contractor secured a lease to the land, obligating himself in return to "drill a well to the Cromwell sand, if oil and gas is not found in paying quantities at a lesser depth"; and to "test the Cromwell sand before the lease is turned back." A parallel case would be presented if a water well contractor agreed to drill a water well to a depth of 1000 feet to the stratum of a suspected water course unless a stated flow of wholesome water were found at a lesser depth, and specifically agreed to test the stratum before deciding that no water was present.

### Justifies Quitting

In the Oklahoma case, the lessee drilled to a depth of 2085 feet before he quit. Experience showed that Cromwell sand, if encountered at all, was to be found at a depth of approximately 3400 feet. The driller justified his quitting on the ground that subsurface conditions showed that it was unlikely that production quantities could be secured by drilling deeper. The lessor sued the lessee for damages for breach of the lease.

The first legal point of interest to contractors is that a contract to drill to a certain stratum or to drill a well of a certain depth is *not* divisible; and consequently, by general rules of contract law, a contractor who quits with the job less than substantially done, is entitled to nothing for his pains and is liable to the land owner for damages. To collect the full contract price, the driller must hew to the letter of the contract; if he, after good faithful effort does less than that, but still enough to give the landowner approximately what he called for, the driller will be able to collect his contract price less the amount representing the value of that part of the work which remained undone. For less than substantial performance, he gets nothing.

### Reserve Right

All of this is familiar and generally followed contract law; and should be in the contractor's mind, to be given due consideration before he signs a contract. If a gamble is involved, and the contractor feels that at lesser depth he can determine the undesirable characteristics of the stratum which he originally proposed to test for water, gas, or oil, he should expressly reserve to himself the right to abandon drilling at the lesser depth if he should deem it unfeasible to proceed.

It may be that the lessee in Oklahoma did consider when drawing the contract the possibility of wishing to discontinue drilling the test bore, and did seek to protect himself by use of the clause on which he relied in the suit. If such was his intent, he failed to protect himself ade-

*(Continued on page 15)*

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The undersigned certifies, subject to the criminal penalties for misrepresentation contained in Section 35(A) of the United States Criminal Code, that the items covered by this order are required for essential maintenance, repair or operating supplies; that this order is rated and placed in compliance with CMP Regulation No. 5; and that the delivery requested will not result in violation of the quantity restrictions contained in paragraph (f) of said regulation.

Authorized under L-192—current use.

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All items are offered subject to prior sale and F.O.B. shipping point location of tools shown in first column—"EN"-Englewood; "EV"-Evansville; "SM"-South Milwaukee.

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**Mention List No. 644 when ordering.**

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| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| **Drill Bits** | | | | | | | |
| SM | 1 | 3″ | 1⅜″x2″—8 OWS | 5-222623 | 75 | $ 24.50 | $ 22.00 |
| SM | 1 | 3½″ | 1⅛x1¾ #13 Cyc. | 11-99619 | 75 | 24.50 | 22.00 |
| SM | 7 | 3½″ | 1⅜x2—8 OWS. | 10-222623 | 75 | 24.50 | 19.75 |
| SM | 6 | 3½″ | 1½x2¼—8 API. | 13-222620 | 75 | 24.50 | 22.00 |
| SM | 9 | 4″ | 1⅜x2—8 OWS. | 18-222623 | 75 | 24.50 | 22.00 |
| SM | 4 | 4½″ | 1⅜x2—8 OWS. | 35-222623 | 75 | 24.50 | 16.25 |
| EN | 1 | 4½″ | 1⅝x2½—8 OWS. | 38-222623 | 100 | 26.25 | 23.65 |
| SM | 4 | 4½″ | 1⅝x2½—8 OWS. | 36-222623 | 75 | 24.50 | 22.00 |
| SM | 8 | 4½″ | 1⅜x2—8 OWS. | 39-222623 | 100 | 26.25 | 23.65 |
| SM | 3 | 4½″ | 1½x2¼—8 API. | 40-220908 | 100 | 26.25 | 23.65 |
| SM | 2 | 4½″ | 1⅝x2⅝—7 API. | 41-222620 | 100 | 26.25 | 23.65 |
| SM | 9 | 5″ | 1⅜x2—8 OWS. | 54-99619 | 100 | 26.25 | 23.65 |
| EN | 2 | 5⅛—Star | 2x3—8 OWS. | 23-93270 | 200 | 35.25 | 24.70 |
| SM | 1 | 5⅛—Star | 1⅝x2½—8 OWS. | OSP | 210 | 48.25 | 33.80 |
| SM | 2 | 5⅝″ | 2½x3½—7. | 10-222621 | 150 | 31.25 | 21.90 |
| SM | 1 | 5⅝″ | #5 Cyc. | 66-222623 | 250 | 38.75 | 31.70 |
| SM | 3 | 6⅝″ | 2x3—8 OWS. | 1-221984 | 200 | 42.25 | 29.75 |
| EN | 2 | 6⅝″ (Sharpened) | 2x3—7. | 101-99619 | 250 | 44.60 | 31.25 |
| SM | 2 | 6⅝″ (Sharpened to 7⅞″) Oil Well Type | 2¾x3¾″—7. | 1-263977 | 375 | 63.45 | 50.00 |
| SM | 4 | 8″ | 3x4—7. | 9-99406 | 600 | 80.00 | 56.00 |
| SM | 6 | 9″ | 3x4—7. | 54-220910 | 500 | 66.75 | 53.50 |
| SM | 1 | 10″ (Sharpened) | 4x5—7. | 176-222910 | 600 | 102.50 | 87.25 |
| SM | 4 | 11½″ (Sharpened) | 2¼x3¼—7. | 187-222624 | 400 | 78.75 | 67.00 |
| SM | 1 | 14″ | 2¾x3¾—7. | 1-198566 | 1000 | 155.00 | 131.75 |
| SM | 1 | 15″ (Sharpened) | 2¼x3¼—7. | 103-223435 | 800 | 133.50 | 120.25 |
| SM | 1 | 16¾″ (Sharpened) | 2¼x3¼—7. | 104-262964 | 1000 | 172.50 | 155.25 |
| **Drill Stem** | | | | | | | |
| SM | 1 | 2½″x12′ | 1⅛″x1¾″—13 Cyc. | 5-99373 | 191 | $ 45.75 | $ 41.20 |
| SM | 1 | 2½″x12′ | 1⅛″x1¾″—13 Cyc. | 1-119765 | 191 | 45.75 | 41.20 |
| SM | 6 | 2½″x12′ | 1⅜″x2″—8 OWS. | 2-119766 | 191 | 45.75 | 41.20 |
| SM | 8 | 2½″x12′ | 1½″x2¼″—8 API. | 1-260611 | 205 | 46.50 | 41.85 |

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| SM | 8 | 2½" x12' | 1½" x2¼"—8 API | 1-260611 | 205 | 46.50 | 41.85 |

## SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| SM | 2 | 2½" x14' | 1⅜" x2"—8 OWS | 1-119766 | 239 | 51.25 | 46.15 |
| EV | 1 | 2½" x14' | 1⅜" x2"—8 OWS | 1-119766 | 239 | 51.25 | 46.15 |
| SM | 2 | 2½" x14' | 1½" x2¼"—8 API | 3-260611 | 243 | 51.25 | 46.15 |
| SM | 8 | 3" x12' | 1⅝" x2½"—8 OWS | 2-119767 | 288 | 50.25 | 45.25 |
| EV | 1 | 3" x12' | 1⅝" x2½"—8 OWS | 2-119767 | 288 | 50.25 | 45.25 |
| SM | 7 | 3" x12' | 1⅝" x2⅝"—7 API | 1-260610 | 295 | 53.50 | 48.15 |
| SM | 3 | 3" x12' | 1½" x2¼"—8 API | 5-260611 | 277 | 49.00 | 44.00 |
| EV | 1 | 3" x12' | 1½" x2¼"—8 API | 5-260611 | 277 | 49.00 | 44.00 |
| SM | 1 | 3" x12' | 1⅜" x2"—8 OWS | 3-119766 | 260 | 50.25 | 45.25 |
| SM | 2 | 3" x14' | 1⅝" x2½"—8 OWS | 1-119767 | 343 | 54.75 | 49.30 |
| SM | 9 | 3" x14' | 1⅝" x2⅝"—7 API | 2-260610 | 350 | 56.25 | 50.65 |
| SM | 3 | 3¼" x12' | 1⅝" x2⅝"—7 API | 4-260610 | 336 | 54.00 | 49.60 |
| SM | 3 | 3½" x8' | 2" x3"—7 API | 3-119763 | 282 | 50.00 | 38.50 |
| SM | 7 | 3½" x12' | 2" x3"—7 API | 4-119763 | 406 | 57.25 | 51.55 |
| EV | 1 | 3½" x12' | 2" x3"—7 API | 4-119763 | 406 | 57.25 | 51.55 |
| SM | 7 | 3½" x12' | 2" x3"—8 OWS | 6-119763 | 406 | 57.25 | 51.55 |
| SM | 11 | 3½" x12' | 2" x3"—8 KD | 7-119263 | 406 | 57.25 | 51.55 |
| SM | 4 | 3½" x16' | 2" x3"—7 API | 1-119763 | 548 | 73.50 | 66.15 |
| SM | 6 | 3½" x16' | 2" x3"—8 KD | 8-119763 | 548 | 73.50 | 52.50 |
| SM | 5 | 3½" x16' | 2" x3"—8 OWS | 2-119763 | 548 | 73.50 | 66.15 |
| SM | 1 | 3½" x16' | 2¼" x3¼"—7 API | 9-119789 | 588 | 77.25 | 69.55 |
| SM | 3 | 3½" x18' | 2" x3"—8 OWS | 75-99373 | 613 | 75.25 | 67.75 |
| SM | 2 | 4" x16' | 2" x3"—8 KD | 6-119790 | 686 | 80.00 | 72.00 |
| EN | 1 | 4" x18' | 2" x3"—7 API | 93-99373 | 771 | 84.00 | 77.60 |
| SM | 8 | 4" x24' | 2" x3"—7 API | 95-223074 | 1026 | 103.00 | 92.70 |
| EN | 1 | 4¼" x14' | #5 Cyc | 109-99373 | 680 | 85.00 | 59.50 |
| EN | 1 | 4¼" x20' | #5 Cyc | 107-99373 | 969 | 99.00 | 69.50 |
| SM | 4 | 4½" x6' | 2¼" x3¼"—7 API | 10-119789 | 317 | 61.75 | 43.25 |
| SM | 1 | 4½" x30' | 2¾" x3¾"—7 | 133-223074 | 1656 | 145.00 | 131.00 |
| SM | 1 | 5½" x20' | 3¼" x4¼"—7 | 169-99373 | 1665 | 167.00 | 83.50 |
| EV | 1 | 5" x24' | 2½" x3½"—7 API | 152-99373 | 1596 | 134.00 | 121.50 |

### Drilling Jars

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SM | 1 | 3" x6" | 1½" x2¼"—8 API | 16-222026 | 85 | $ 72.00 | $ 64.80 |
| SM | 9 | 3½" x6" | 1⅜"—2 OWS | 10-222031 | 130 | 74.00 | 66.60 |

# SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| **Fishing Jars** | | | | | | | |
| EN | 1 | 3″x12′ | 1⅜″x2″—8 OWS | 15-99396 | 95 | 86.00 | 68.80 |
| SM | 2 | 3½″x18′ | 1⅜″x2″—8 OWS | 18-99397 | 155 | 101.00 | 85.85 |
| EN | 1 | 4″x12′ | 1⅝″x2½″—8 OWS | 18-99428 | 195 | 96.00 | 67.25 |
| SM | 1 | 4″x18′ | 1⅝″x2⅝″—7 API | 18-222027 | 210 | 105.00 | 94.50 |
| EN | 1 | 4½″x12′ | 2″x3″—7 API | 2-99429 | 255 | 104.00 | 72.80 |
| EN | 1 | 4½″x12′ | 2″x3″—8 KD | 8-99429 | 255 | 104.00 | 72.80 |
| SM | 1 | 5½″x18′ | 2½″x3½″—7 API | 23-222029 | 460 | 159.00 | 79.50 |
| SM | 4 | 5½″x18′ | 2½″x3½″—7 API | 23-222029 | 460 | 139.00 | 125.00 |
| SM | 2 | 5½″x12′ | 2½″x3½″—7 API | 21-99430 | 430 | 134.00 | 120.60 |
| SM | 2 | 5½″x24′ | 2¾″x3¾″—7 API | 19-222029 | 490 | 145.00 | 130.50 |
| SM | 2 | 5½″x36′ | 2¾″x3¾″—7 API | 20-222029 | 545 | 159.00 | 143.00 |
| SM | 1 | 6″x20′ | 2½″x3½″—7 API | 1-99431 | 650 | 167.00 | 150.30 |
| SM | 1 | 7″x24′ | 2¾″x3¾″—7 API | 27-222030 | 985 | 263.00 | 236.70 |
| SM | 2 | 7″x24′ | 4″x5″—7 API | 26-222030 | 985 | 263.00 | 236.70 |
| **Rope Sockets** | | | | | | | |
| EN | 1 | Solid Manila Rope Socket | 1⅝″x2½″—8 OWS | 2-193795 | 50 | 30.00 | 21.00 |
| EN | 9 | Solid Manila Rope Socket | #5 Cyc. | 7-193795 | 95 | 33.75 | 16.90 |
| SM | 2 | Solid Manila Rope Socket | 1⅜″x2″—8 OWS | 1-193795 | 40 | 23.25 | 16.25 |
| SM | 4 | Regular Wire Line Socket | 1⅛″x1¾″ #13 Cyc. | 2-119728 | 25 | 19.25 | 15.50 |
| SM | 10 | Reg. Wire Line Rope Socket | 1⅜″x2″—8 OWS | 3-119721 | 28 | 20.00 | 16.00 |
| SM | 3 | Reg. Wire Line Rope Socket | 1⅝″x2½″—8 OWS | 2-119727 | 35 | 22.25 | 17.80 |
| EN | 1 | Reg. Wire Line Rope Socket | 1⅝″x2½″—8 OWS | 1-119727 | 35 | 22.25 | 17.80 |
| SM | 1 | Reg. Wire Line Rope Socket | 1⅝″x2⅝″—7 API | 3-119731 | 35 | 22.25 | 20.00 |
| EN | 1 | Reg. Wire Line Rope Socket | 2″x3″—8 OWS | 7-193794 | 48 | 25.75 | 18.00 |
| SM | 6 | Reg. Wire Line Rope Socket | 2″x3″—8 OWS | 5-119717 | 48 | 25.75 | 23.25 |
| EV | 1 | Reg. Wire Line Rope Socket | 2″x3″—8 OWS | 5-119717 | 48 | 25.75 | 21.90 |
| SM | 1 | Reg. Wire Line Rope Socket | 2″x3″—8 KD | 3-119717 | 48 | 25.75 | 20.60 |
| EV | 1 | Reg. Wire Line Rope Socket | 2″x3″—8 KD | 3-119717 | 48 | 25.75 | 20.60 |
| EV | 3 | Reg. Wire Line Rope Socket | 2″x3″—7 API | 7-119717 | 48 | 25.75 | 15.50 |
| SM | 7 | Reg. Wire Line Rope Socket | #5 Cyc. | 1-119729 | 62 | 26.50 | 22.00 |
| EN | 1 | Reg. Wire Line Rope Socket | #5 Cyc. | 10-193794 | 62 | 26.50 | 18.60 |
| EV | 1 | Reg. Wire Line Rope Socket | 2¼″x3¼″—7 API | 6-119729 | 62 | 26.50 | 22.50 |

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| EV | 1 | Reg. Wire Line Rope Socket | 2¼"x3¼"—7 API | 6-119729 | 62 | 26.50 | 22.50 |

## SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| SM | 3 | Reg. Wire Line Rope Socket | 2¾"x3¾"—7 API | 5-119730 | 92 | 31.00 | 26.35 |
| EV | 1 | Reg. Wire Line Rope Socket | 2¾"x3¾"—7 API | 5-119730 | 92 | 31.00 | 26.35 |
| SM | 1 | Swivel Wire Rope Socket | 2½"x3½"—7 API | 1-265531 | 114 | 59.75 | 53.80 |
| SM | 5 | Swivel Wire Rope Socket | 3"x4"—7 API | 1-261794 | 178 | 67.75 | 47.50 |
| **Bailer — Flat Valve & Dart Valve** | | | | | | | |
| EN | 1 | Flat Valve —3"x10'0" | | 5-99389 | 45 | $ 22.25 | $ 17.85 |
| SM | 2 | Flat Valve —2½"x10'0" | | 9-222212 | 36 | 22.25 | 20.00 |
| SM | 1 | Flat Valve —3"x10'0" | | 5-222212 | 45 | 22.25 | 20.00 |
| SM | 1 | Flat Valve —3"x10'0" | | 21-225253 | 45 | 22.25 | 20.00 |
| SM | 2 | Dart Valve—4"x18'0" | | 87-222187 | 119 | 35.50 | 31.95 |
| EV | 1 | Dart Valve—4"x22'0" | | 89-222187 | 140 | 38.25 | 34.50 |
| SM | 2 | Dart Valve—4"x30'0" | | 119-222187 | 184 | 45.25 | 40.75 |
| SM | 4 | Dart Valve—4¼"x30'0" | | 127-222187 | 197 | 47.00 | 42.30 |
| EV | 1 | Dart Valve—4¾"x18'0" | | 107-225317 | 161 | 41.00 | 37.00 |
| EV | 1 | Dart Valve—4¾"x22'0" | | 67-222187 | 192 | 47.25 | 42.25 |
| EV | 1 | Dart Valve—6"x18'0" | | 95-222187 | 235 | 58.75 | 53.00 |
| EV | 1 | Dart Valve—12"x10'0" | | 43-222187 | 620 | 151.00 | 136.00 |
| **Sand Pump Larkin Steel Plunger Type** | | | | | | | |
| SM | 1 | Dart Valve—4⅜"x10'0" | | 8-99372 | .. | 100.00 | 75.00 |
| SM | 2 | Dart Valve—4¾"x10'0" | | 18-99372 | .. | 100.00 | 75.00 |
| SM | 1 | Dart Valve—4¾"x10'0" | | 1-99372 | .. | 100.00 | 75.00 |
| **Box and Pin Joints for Welding** | | | | | | | |
| SM | 4 | Box Joint | 1⅛"x1¾"—#13 Cyc. | 12-99391 | 25 | 14.75 | 13.35 |
| SM | 1 | Box Joint | 1⅝"x2⅝"—7 API | 1-223072 | 70 | 17.00 | 15.30 |
| SM | 2 | Box Joint | 2"x3"—8 OWS | 17-99391 | 100 | 18.00 | 16.20 |
| EV | 1 | Box Joint | 2"x3"—8 OWS | 17-99391 | 100 | 18.00 | 16.20 |
| EN | 3 | Box Joint | 2"x3"—8 OWS | 17-99380 | 100 | 18.00 | 16.20 |
| EN | 2 | Pin Point | 2"x3"—8 KD | 22-99390 | 90 | 15.25 | 13.75 |
| EN | 2 | Pin Joint | #5 Cyc. | 20-99390 | 110 | 17.25 | 15.55 |
| SM | 5 | Pin Joint | 3½"x4½"—7 API | 8-99391 | 240 | 32.25 | 22.60 |
| SM | 5 | Box Joint | 3½"x4½"—7 API | 8-99390 | 270 | 35.75 | 25.00 |

# SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| **Substitutes** | | | | | | | |
| EN | 2 | Pin 2″x3″—7 API-Box 2¼″x3¼″—7 API | | 6-99392 | 210 | 35.00 | 28.00 |
| EN | 1 | Pin 2″x3″—7 API-Box 2″x3″—8 KD | | 1-99392 | 190 | 33.25 | 26.60 |
| EN | 1 | Pin 2″x3″—8 OWS-Box 2¼″x3¼″—7 API | | 4-99392 | 210 | 35.00 | 28.00 |
| EN | 1 | Pin 2¼″x3¼″—7 API-Box 2″x3″—7 API | | 7-99392 | 210 | 35.25 | 28.25 |
| EN | 1 | Pin 2¾″x3¾″—7 API-Box 3¼″x4¼″—7 API | | 8-99392 | 415 | 51.50 | 41.25 |
| **Round Reamers** | | | | | | | |
| SM | 3 | Round Reamers—5⅝″ blank to finish | 2″x3″ | 1-261492 | 250 | 52.50 | 47.30 |
| SM | 1 | Round Reamers—6⅝″ blank to finish | 2½″x3½″ | 3-261492 | 370 | 70.25 | 63.25 |
| **Casing Swedge** | | | | | | | |
| SM | 1 | Casing Swedge—4″ | 1½″x2¼″—8 API | 1-261491 | 70 | 32.00 | 29.00 |
| **Combination Sockets with One Set Slips** | | | | | | | |
| EN | 1 | Combination Socket— 4½″ hole | 1⅜″x2″—8 OWS | 99718 | 100 | 55.00 | 25.00 |
| EV | 1 | Combination Socket— 5″ hole | 1⅝″x2⅝″—7 API | 3-261499 | 115 | 65.00 | 59.00 |
| SM | 5 | Combination Socket— 8″ hole | 3″x4″—7 API | 8-261499 | 345 | 105.00 | 95.00 |
| SM | 5 | Combination Socket— 8″ hole | 2½″x3½″—7 API | 10-261499 | 345 | 105.00 | 95.00 |
| SM | 5 | Combination Socket—10″ hole | 4″x5″—7 API | 9-261499 | 525 | 135.00 | 122.00 |
| **Horn Sockets** | | | | | | | |
| SM | 5 | Horn Sockets—4″ hole | 1⅜″x2″—8 OWS | 11-94816 | 55 | 45.00 | 40.50 |
| EN | 1 | Horn Sockets—5⅝″ or 6″ hole | 2″x3″—8 OWS | 43-94816 | 140 | 55.00 | 41.25 |
| SM | 1 | Horn Sockets—6″ hole | 2¼″x3¼″—7 API | 49-94816 | 155 | 58.00 | 43.50 |
| **Friction Sockets — Corrugated (Used)** | | | | | | | |
| SM | 1 | Friction Socket—6⅝″ hole | 2¼″x3¼″—7 API | 2-262094 | 160 | 80.00 | 40.00 |
| SM | 1 | Friction Socket—8″ hole | 2¾″x3¾″—7 API | 3-262094 | 225 | 95.00 | 47.50 |

# SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| **Full Circle Slip Sockets with Slips** | | | | | | | |
| SM | 4 | Full circle slip sockets for 10" hole | 4"x5"—7 API | 2-261497 | 550 | 180.00 | 160.00 |
| **Rope Spears — Single Prong** | | | | | | | |
| SM | 2 | Rope Spears—4" hole | 1⅜"x2"—8 OWS | 4-99860 | 75 | 43.25 | 39.00 |
| SM | 1 | Rope Spears—4½" hole | 1⅝"x2½"—8 | 5-99860 | 95 | 45.00 | 40.50 |
| SM | 1 | Rope Spears—5" hole | 1⅝"x2⅝"—7 API | 10-99860 | 120 | 52.25 | 47.00 |
| EN | 1 | Rope Spears—5⅝" or 6" hole | 2"x3"—7 API | 1-96817 | 150 | 54.00 | 40.50 |
| SM | 1 | Rope Spears—6⅝" hole | 2½"x3½"—7 API | 7-261489 | 195 | 66.75 | 60.25 |
| SM | 1 | Rope Spears—8" hole | 3"x4"—7 API | 16-99860 | 275 | 89.00 | 80.00 |
| SM | 2 | Rope Spears—8" hole | 3"x4"—7 API | 8-261489 | 275 | 89.00 | 80.00 |
| SM | 2 | Rope Spears—12" hole | 4"x5"—7 API | 10-261489 | 650 | 135.00 | 101.25 |
| **Rope Spears — 2-Prong** | | | | | | | |
| SM | 1 | Rope Spear—6" | 2¼"x3¼"—7 API | 1-194093 | 240 | 97.00 | 72.75 |
| **Side Spuds** | | | | | | | |
| SM | 1 | Side Spud—4" hole—8' long | 1½"x2¼"—7 API | 1-261490 | 130 | $ 75.50 | $ 56.65 |
| SM | 1 | Side Spud—5" hole—10' long | 1⅝"x2⅝"—7 API | 2-261490 | 159 | 98.25 | 73.70 |
| SM | 2 | Side Spud—6¼" hole—8' long | 2¼"x3¼"—7 API | 8-118738 | 265 | 111.00 | 94.35 |
| SM | 2 | Side Spud—8" hole—8' long | 2¼"x3¼"—7 API | 3-118738 | 350 | 150.00 | 127.50 |
| SM | 1 | Side Spud—8¼" hole—12' long | 2¾"x3¾"—7 API | 5-261490 | 440 | 210.00 | 147.00 |
| **Casing Spear — Bull Dog** | | | | | | | |
| SM | 1 | Casing Spear—6"—Std. pipe—3 slip | 1⅝"x2½"—8 OWS | | 230 | 150.00 | 105.00 |
| **Underreamer** | | | | | | | |
| SM | 1 | Acme Brown—3 Cutter Underreamer for 6" Pipe | 1⅝"x2⅝"—7 API | | | 420.00 | 336.00 |
| **Jar Bumper — Manila Line** | | | | | | | |
| SM | 2 | Jar Bumper—M.L. Solid eye—2"x12' | | 5-118071 | 165 | 47.00 | 35.25 |
| EN | 3 | Jar Bumper—M.L. Solid eye—2½"x12' | | 6-118071 | 240 | 57.00 | 39.90 |
| SM | 3 | Jar Bumper—M.L. Solid eye—2½"x12' | | 6-118071 | 240 | 57.00 | 39.90 |

# SURPLUS STOCK — DRILLING AND FISHING TOOLS

| LOCATION | QUAN. | DESCRIPTION | JOINT SIZE | PIECE MARK | WEIGHT EACH | LIST PRICE EACH | SPECIAL PRICE EACH |
|---|---|---|---|---|---|---|---|
| **Pins with Swivel Hooks** | | | | | | | |
| SM | 4 | Pins with swivel hook | 1⅝"x2½"—8 OWS | 1-261494 | 75 | 43.00 | 34.40 |
| SM | 4 | Pins with swivel hook | 1⅝"x2⅝"—7 API | 2-261494 | 75 | 43.00 | 44.40 |
| **Latch Jacks** | | | | | | | |
| SM | 1 | Latch Jack— 4" hole | 1⅜"x2"—8 OWS | 40-99864 | 40 | 35.75 | 30.40 |
| SM | 1 | Latch Jack— 4½" hole | 1⅝"x2½"—8 OWS | 41-99864 | 55 | 37.50 | 31.90 |
| SM | 2 | Latch Jack—10" hole | 4"x5"—7 API | 47-99864 | 340 | 83.50 | 71.00 |
| **Drive Shoes** | | | | | | | |
| EN | 3 | Drive Shoes—5" Std. pipe—female | | 1-194792 | 11 | 6.90 | 5.50 |
| SM | 22 | Drive Shoes—5⅝" std. casing | | 1-93885 | 12 | 7.25 | 5.15 |
| **Drive Heads** | | | | | | | |
| SM | 1 | Drive Head—Male Drop Type for 8¼" std. casing | | 11-261495 | 65 | $ 37.75 | $ 34.00 |
| SM | 1 | Drive Head—Male Drop Type for 10" std. pipe | | 13-261495 | 125 | 48.50 | 43.65 |
| SM | 1 | Drive Head—Male Drop Type for 12" std. pipe | | 14-261495 | 240 | 61.00 | 55.00 |
| SM | 2 | Drive Head—Male Drop Type for 12" std. pipe | | 9-118863 | 240 | 61.00 | 55.00 |
| **Tool Wrenches** | | | | | | | |
| SM | 3-Pr. | Cast Steel Tool Wrenches, plain end | 3" sqr. | 261442-AG&AH | 105-ea. | 37.25-Pr. | 26.00-Pr. |
| SM | 1-Pr. | Cast Steel Tool Wrenches, claw end | 1⅞" sqr. | 261442-AC | 50-ea. | 23.75-Pr. | 21.00-Pr. |
| SM | 2-Pr. | Cast Steel Tool Wrenches, claw end | 4½" sqr. | 221818-AK | 165-ea. | 55.75-Pr. | 39.00-Pr. |
| SM | 1-Pr. | Cast Steel Tool Wrenches, jack end | 5½" sqr. | 222807-2 R&L | 285-ea. | 83.50-Pr. | 62.65-Pr. |
| SM | 2-Pr. | Forged Steel Jack End Tool Wrenches | 4" sqr. | 193808-4 R&L | 250-ea. | 55.75-Pr. | 27.90-Pr. |
| **Miscellaneous** | | | | | | | |
| SM | 2 | Double Casing Blocks | | 302790-Gr. 2 | 205 | 71.00 | 64.00 |
| SM | 1-Pr. | (2) Casing Elevators WI Reg. pattern for, 10¾" O.D. Casing | | 21-262093 | 440 | 148.50-Pr. | 133.65-Pr. |
| SM | 1-Pr. | (2) Casing Elevators WI Reg. pattern for, 16" pipe | | 100-262093 | 1180 | 297.00-Pr. | 252.50-Pr. |
| SM | 1 | 5" Casing Hook—60000# Safe Working Load, Plain Br. | | 3-262092 | 275 | 94.00 | 85.00 |
| SM | 1 | Box with solid eye | 2"x3"—7 API | 52-262090 | 80 | $ 16.50 | $ 11.50 |

# "THE PUMP IS PROOF of the DRILLING JOB"

## *says Virginia Driller*

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58WS4

# FROM THE MAILBAG

This page is open to any of our readers having questions to ask relating to drilling, driving pipe, dressing bits, etc. All letters will be answered promptly by experienced drillers and engineers who are qualified to give intelligent advice on these subjects. We will publish as many letters of general interest as space will permit. Address: The Driller, South Milwaukee, Wis.

**Sirs:**

**In this territory water veins are about 50 to 150 feet deep and we run into shale rock which is salty. We go through a blue clay before we hit the sand veins. We usually hit this clay about 6 feet below the surface and as mentioned above the clay occurs from 50 to 150 feet before the sand vein is reached. The sand vein is about 2 to 10 feet thick.**

**I have had much trouble with this clay for if I am unable to get 2-inch well casings down to the sand vein at once, the clay comes into the vein and plugs it up. Then I have to drill another hole. A few times, I have had to drill three holes before I got a well. Will you please let me know if you think dry ice will help me? If so, how much should I use? The water in the casing rises to within 50 to 20 feet from the surface. After I put the dry ice in the casing, would it be necessary to clean out the clay in one of these wells with dry ice?**

**B. H. K.** **Michigan.**

As to the possibility of utilizing dry ice successfully for developing the wells you speak of, it is rather difficult for us to make a definite statement with our limited knowledge of the actual conditions.

First of all, not all types of soil, of course, respond to the dry ice treatment. Blue clay, for instance, tightly packed and which is not mixed with gravel, as a rule, will not be affected by the use of dry ice. Where the blue clay is mixed with gravel, then the conditions are ideal for dry ice treatment.

What the dry ice actually does, when fed into the well, is to revert to gas as soon as it strikes the water, setting up a surging action and pressure which forces the water back and forth through the water bearing strata which washes the clay away from the gravel.

If, as you say, the blue clay gets down into the sand vein and plugs the well, it would appear under such conditions that dry ice would be effective in developing these wells.

### Worth Trying

At any rate it would be worth a trial as you have everything to gain and nothing to lose except what you might be out for the cost of the dry ice. It is difficult to advise how much dry ice should be used as there are so many factors to be considered. It may be helpful, however, to remember that one pound of dry ice releases 8.7 cubic feet of gas at 70° F., and atmospheric pressure. Dry ice is a product of the Pure Carbonic, Inc., who we believe have an office in Chicago or dry ice can usually be obtained from wholesale dealers such as wholesale drug companies, etc. Caution must be used in handling dry ice. When it is released to the water, the well emits quantities of carbon dioxide gas which is very suffocating and anyone attempting to use dry ice should first acquaint himself with its action.

---

As if drillers didn't know, a judge once proclaimed that percolating water moves in a "mysterious manner," in "unknown and unknowable" courses.

## *Abandonment . . .*

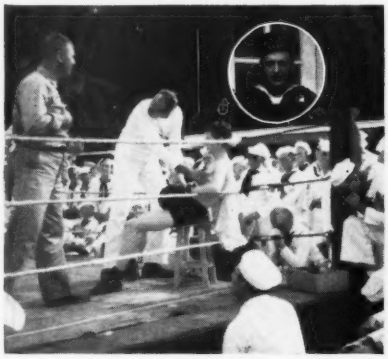
*(Continued from page 12)*

quately, in that he inserted a provision the meaning of which was not clear even if taken apart from the rest of the contract. In addition, he failed to hedge appropriately the clause which contained his clearly expressed general obligation: to dig a well to the Cromwell sands.

The contractor should keep in mind the fact that if the agreement becomes the subject of a law suit, the court will read the contract as a whole; and if a following clause is to be considered as modifying the main undertaking for the contractor's full protection, the latter clause should read somewhat as follows: "The contractor agrees to drill a well to the Cromwell sand, except in the event specified in paragraph .... below."

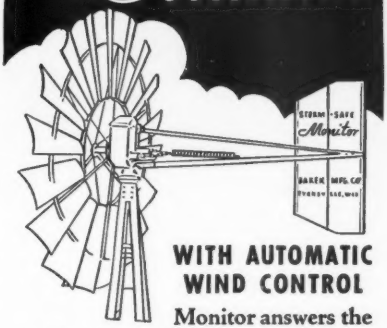
— A. L. H. Street.

## Badger Driller 'Seconds' In Navy



• This snap from Beck H. Goldbeck, former Appleton, Wisconsin driller, shows Beck (in white) acting as a second in a South Pacific boxing match. Inset shows Beck in Navy "blues."


Coming! NEW Monitors

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# WIT BITS

Wives of drillers all remind them
They must change their pants down stairs.
Wives hate men who leave behind them
Mud stains on the bedroom chairs.

Two cab drivers were glaring at each other. "Aw, what's the matter with you?" demanded one.

"Nothing's the matter with me."

"You gave me a dirty look," persisted the first.

"Well," responded the other, "now you mention it, you certainly have a dirty look, but I didn't give it to you."

It remained for a help wanted advertiser to put the thought into black and white: "Will pay you $5 more than you are worth."

Cookie: "What'll I do Sergeant? The oil stove has gone out."

Supply Sergeant: "Well, light it again."

Cookie: "But I can't. It's gone out through the roof."

The police had photographed the convict in six positions, and sent the pictures throughout the country, asking the authorities to apprehend him. Promptly came the reply from the marshal of Nicksville Corners, which read as follows: "Received the pictures of criminals. Have captured five of them and am on the trail of the sixth."

A drilling contractor advertises: "Help wanted; dead or alive."

A soldier from Africa wrote home that they gave him so many vitamin pills and put so much iron in his blood that he once gave a transfusion to a jeep.

New Suburban Gardener: "I don't seem able to tell my garden plants from weeds. How do you distinguish between them?"

Old Suburban Gardener: "The only sure way is to pull 'em out. If they come up again, they're weeds."

First Devil: "Ha, ha! Ho, ho!"

Satan: "Why do you laugh?"

First Devil: "I just put a woman into a room with a thousand hats and no mirror."

Mess Sergeant: "You're not eating your fish—what's wrong with it?"

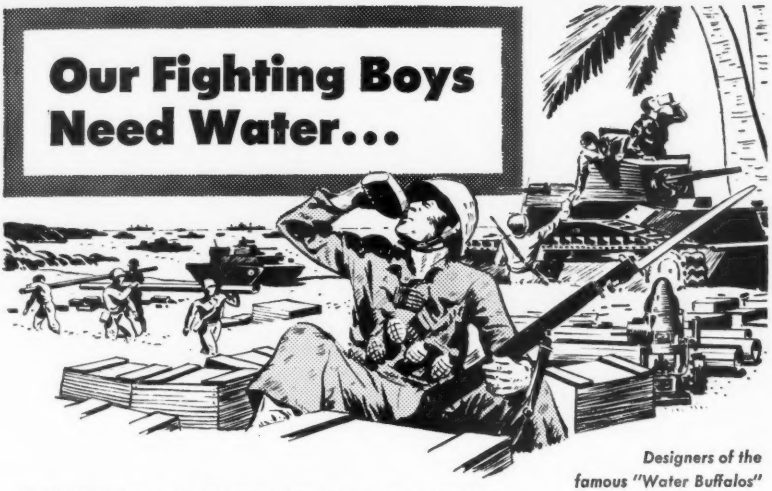
Private: "Long time no sea."

Mama Kangaroo was in a hurry as she bounced down the road with Baby in her front carriage. But every once in a while she'd have to stop and angrily scratch herself. It impeded progress.

Finally she looked down, came to a sudden stop, yanked Baby Kangaroo out, and began to spank him.

"There," she exclaimed as she put the squalling brat back. "That'll teach you not to eat crackers in bed!"

# Our Fighting Boys Need Water...



*Designers of the famous "Water Buffalos"*

IT TAKES a lot of things, like bullets, bombs, bayonets, bazookas—and *water,* to win a war. Cool, fresh, drinkable water in abundance. *Peerless Pumps* at the fighting fronts keep canteens filled—and keep our fighting men fit! Ever since Pearl Harbor, the building of *Peerless Pumps,* like the building of the justly famous "Water-Buffalo" Amphibian Tanks (also Peerless designed), has been an essential *War Industry.* Even in the days before the war, Peerless was producing *more* Deep Well Turbine Pumps than any other concern in America. As the leading manufacturer in the Industry, Peerless won recognition throughout the entire civilized world. On the great ranches, farms, orchards and irrigation projects. In the waterworks of our great cities. In the vast industrial plants. Wherever water is needed, there you find dependable Peerless Pumps, operating twenty-four hours per day, year in and year out.

Now that we are meeting the tremendous war-front demand for Pumps, we hope to be able to start "digging in" on our huge backlog of orders for home needs.

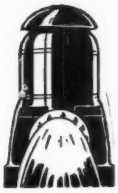
**TURBINE TYPE**
*(Deep Well)*
15 to 30,000 Gallons Per Minute

**HI-LIFT TYPE**
Vertical Rotative Shaft Pump
Positive Displacement
10 to 60 Gallons Per Minute

**HYDRO-FOIL TYPE**
600 to 220,000 Gallons Per Minute

PEERLESS PUMP DIVISION—*Food Machinery Corporation*
1250 Camden Ave., S.W. Canton 6, O.; 301 W. Ave. 26, Los Angeles 31, Cal.
OTHER FACTORIES: Fresno 16, San Jose 5, California

# PEERLESS

## Deep Well  Pumps . . .

## *Mastrians . . .*

*(Continued from page 5)*

bought a rig and, at 20, was the youngest driller in Wisconsin. He was located at Mason, in Bayfield county, where he put in over 800 farm wells.

Martin sold his rig in 1924 but resumed drilling wells after moving to Centuria and buying another rig. In 1929 he landed the contract for a co-op creamery well in Superior. The job was an 8-incher, drilled to 206 feet, finished with a 34-foot Johnson screen, and delivering 300 gpm. Prospects looked so good in that territory that Martin decided to locate near Superior at Wentworth. He's been there ever since, and in 1935 his brother Pat joined him and the business became a partnership.

Located in the northern Great Lakes region, it was only natural that the Mastrians should be in touch with developments along the Alcan highway. At any rate, they were in on the well drilling end of the Alcan construction job in British Columbia, Canada, drilling about 3000 feet of hole for a series of 6-inch and 4-inch wells.

### Long Moves

Pat started work on the first well in June, 1942, and finished the last well in December of the same year. Only about one-quarter of the time was spent in actual drilling—with the other three quarters devoted to moves, averaging 25 miles in distance, over some difficult terrain. But let Pat relate some of the details.

"Until about the third job we had to be towed by tractors in order to get to the well sites because the mud was often deep enough to reach the hubs of the truck," relates Pat, "and in a couple of cases the rig had to be pulled across muddy spots with a cable winch because the mud was so deep that even crawler tractors couldn't make any headway."

Almost all of the Alcan wells put in by Pat Mastrian were drilled in about 25 feet of blue clay, followed by shale with occasional layers of grey sandstone, Pat reports. Sometimes these layers were only a few feet apart, but at other times the distance was quite considerable. All but two of the wells were finished in rock, with the other two completed in gravel. The biggest flow obtained was 15 gpm, although each well delivered more than 7 gpm.

### Real Winter

They found the weather fine for drilling as long as summer prevailed. When it turned cold it was a different story. "And it got *really* cold, too," recalls Pat, "so cold we had to keep oil burning under the sand line drum to keep from freezing the sand line sheave on top of the head."

At the present time, the Mastrians operate two rigs—the Bucyrus-Erie 22-W and a recently rebuilt wooden Sparta—in a territory which covers about a 60-mile radius from Superior. This takes in chiefly two counties—Douglas in Wisconsin and Carlton in Minnesota.

About 90% of their business consists of farm wells of four-, five-, and six-inch diameters. Annual footage on this type of well runs to some 6000 to 7000 feet. They also drill six- and eight-inch industrial wells which so far have ranges in depth of about 50 to 350 feet. In addition, they have also done some blast hole and test hole drilling—the latter for building sites for several elevators at Superior. One of the elevators was the Co-op Elevator—the largest in the world.

Martin has this to say about the formation in their territory. "On the plains south of Lake Superior the surface formations are mostly clay,

which runs to depths anywhere from 100 to 180 feet. Underneath the clay there's usually from 10 to 60 feet of hard pan, followed by red sandstone in which we usually find water. The rock is very close-grained, which means we have to drill a long way in it."

### Tough Drilling

The Mastrians' territory also includes the southern end of the famous Mesabi Iron Range, and of course, they're called to drill wells there, too. On the range 10 to 20 miles south of the lake, they find volcanic trap rock running at depths varying from a few feet below the surface to as deep as 20 feet. Very little water is obtained in this formation as a rule, although the Mastrians have brought in good yields in some sections of the formation.

Across the range in the southern end of Carlton county the wells run shallow, but are hard to drill because of the presence of numerous boulders in the gravel formations. Wells put in here are, of course, screened.

### Help a Problem

Asked the question "How's business?", the Mastrians are likely to answer "Too good." The reason for that reply has a lot to do with the war, for hampered by the difficulty in getting help and materials, they have had to go slower than they would have liked. At this writing, they have a good year's work ahead.

Getting help is a big problem.

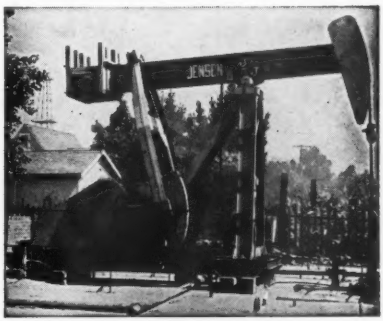
"We're close to five shipyards," Martin explains, "and if you know anything about shipyards in wartime you know that our being so close makes it a tough proposition to get help."

But like a good many drilling contractors, the Mastrians realize that


**TELL YOUR CUSTOMERS about JENSEN Units!**

**When you drill a good well 100 feet deep or deeper, put your customer on the right track — recommend a JENSEN Pumping Unit. It's the best way in the world for a driller to get full credit for a job well done.**

**The JENSEN Unit makes water cheap and dependable. The initial investment is small, the unit is easy to install, and the operating cost is only a few cents a day.**




**You know equipment — your customer seldom does. He'll appreciate information about the best water well pumping unit on the market. Bulletin No. 26 free on request.**

**JENSEN BROS. MFG. CO.**

*14th and Pacific Streets, COFFEYVILLE, KANSAS, U. S. A.*

EXPORT OFFICE: 50 CHURCH ST., NEW YORK CITY, NEW YORK

this condition is one of the unfortunate facts accompanying a war, and they're willing to bear it—even if it's a little hard to grin at all times.

When the war is over it will be another story, they're sure, and they're going ahead on that basis—drilling as much hole now as fast as they can and keeping an eye out for the future.

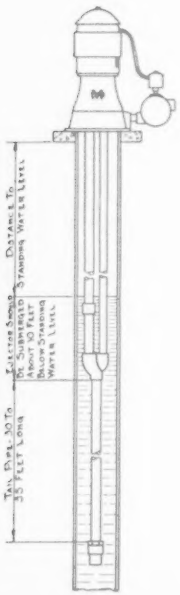
## *Ejectors . . .*

*(Continued from page 8)*

the ejector assembly is over fifteen feet above the water level, there will not be sufficient atmospheric pressure to provide full capacity.

On weak wells, the ejector assembly is sometimes located a considerable distance below the water level so as to utilize the storage capacity of the well. In such installations, the delivery will drop off gradually, as the water level recedes. Here, the objection is that if pumping is continued long enough, the water level may drop below the ejector and admit air. The remedy for such a condition is to reduce delivery by increasing discharge pressure at the regulator valve.

TYPICAL INSTALLATION FOR WEAK WELLS


DISTANCE TO STANDING WATER LEVEL
EJECTOR SHOULD BE SUBMERGED ABOUT TEN FEET BELOW STANDING WATER LEVEL
TAIL PIPE 30 TO 35 FEET LONG

### Add Tail Pipe

For weak well conditions, most pump men prefer to set the ejector about ten feet below the water level and add a thirty-five foot length of tail pipe. As the water level recedes during operation, atmospheric pressure decreases until delivery equalizes with the flow of the well. This is a very desirable feature in ejector type pumps and water systems.

This latter arrangement would be impossible, of course, without forty-five feet or more of standing water in the well. In all cases, it is preferable to use a full thirty-five foot length of tail pipe on weak wells, even though the ejector assembly stands above the water level. Otherwise, air may enter the ejector.

### Omit Pipe

Where there is every indication that the flow of the well is equal to or greater than the pump's rated delivery, it is considered good practice to set the ejector assembly about ten feet below the water level and dispense with the tail pipe. This practice is approved, except in communities where the ground water level is gradually receding, in which case, a lower setting is recommended.

## *More Milk . . .*

*(Continued from page 7)*

as long as the cow continues to drink. Because the animal drinks small quantities at a time, there is no need for warming the water.

The health advantages of running water provided through individual drinking cups are many and obvious. It's plain that tuberculosis and other mouth-borne diseases will spread when cows drink from a single tank, and that, conversely, such diseases will tend not to spread when each cow has its own drinking cup.

In order to supply each dairy cow with water through the medium of drinking cups, there must be a pumping and a piping system which transports water from the well to the barn, and to each individual stanchion in the barn. The well itself must provide sufficient flow so that the water system is kept continually supplied.

### Sales Argument

What is the relation between all this and the well drilling contractor? Obviously, if he can sell a well on the basis of what the well plus drinking bowls will do to increase milk production, he has another good sales argument. Even in cases where a well already exists, there is a possibility that the old well wouldn't provide enough water to keep a running water system adequately supplied. That means the drilling contractor could use the milk production, time economy, and sanitation argument to sell a new well—for the new well would be drilled expressly to provide water in the amounts which the running water system for the barn would require. Thus the sales argument would be a useful tool in selling a well which otherwise would certainly not be bought.

When the war ends, probabilities are high that more and more farmers will be in the right frame of mind to modernize their barns as well as their homes. They'll be more apt to spend their money on improvements which they're certain will bring them a favorable return. The fact that a running water system in the barn will boost milk production should serve as fine opportunity to point out the return Mr. Farmer will get from a well.

So the next time you talk to a farmer prospect, don't forget the milk production, labor and time economy, and sanitation features of a running water system for his barn —they might sell the well for you!

---

The Bible relates that both Abraham and Isaac were well known for their success as well-diggers.

MODERN WATER SUPPLY "by Aurora"
DEEP WELL
Also Centrifugal Pumps of all Types and Jet Pumps
SHALLOW WELL
AURORA DEEP WELL TURBINES
are available in sizes of 4" to 24" for every pumping condition—oil or water lubricated. Streamline designed for highest efficiency and longest life.
APCO Master-Line WATER SUPPLY SYSTEMS
Here is the "Best Buy" in water systems for farm and home. Turbine-Type, Simple, Compact, Silent, Life-Time service of generous, low cost water supply. Fully Guaranteed.
Write for Descriptions.
AURORA Always PUMPS
AURORA PUMP COMPANY
58 Loucks St., Aurora, Illinois

# BARGAIN COUNTER

**To the reader who wishes to advertise used equipment in "Bargain Counter" Section.**

All advertising in this section is payable in advance. Enclose your check or money order with copy. Rate: 30c per line. Minimum charge $1.20. No discounts; no commissions. Read these instructions carefully. The average line contains 28 characters (20 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number if blind advertisement is desired. Count your own copy to save delay. Holding up your advertisement one month to secure approval of revised copy or an additional remittance, may cost you real money in a lost sale. Be sure to enclose the correct amount of money with your order. Closing date—10th of preceding month. Example—January issue closes December 10th.

**To the reader wishing to answer "Bargain Counter" Section advertisements appearing on these pages:**

Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of THE DRILLER, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

## FOR SALE

1500' Sparta cable drill, rubber shock absorber, 8 tires 32 x 6 and new motor. 5 strings of tools, 4 to 16" drills, elevators and fishing tools. Half list price. Levi Mackin, Loesch, Montana.

## MISC.

250 feet of New 2" Hawser Laid Drilling Cable manufactured by the Columbia Rope Co. Never been unwrapped! Price, original invoice. Have changed to Steel Cable. Write or wire G. C. Stremmel, LaFontaine, Indiana.

## WANTED

24-L late model Bucyrus-Erie Spudder that is in good shape. A. W. Adkisson, W. T. Waggoner Bldg., Fort Worth, Texas.

Bucyrus-Erie 22W or 24W or No. 71 Speed Star A-1 condition. State price and condition in first letter. Dyer Bros., 50 Cool St., Waterville, Maine.

**WANTED TO BUY**—One Bucyrus-Erie 21-W Drill, truck mounted, with or without tools. State condition and price. Box 0417

## HELP WANTED

Experienced Driller Wanted. Experienced, water well, 6 and 8 inch holes. Steady work. $1.25 an hour as many hours as you desire. Write giving experience and reference.

Tasker Water Wells
121 S. Kingsboro
Gloversville, N. Y.

Solid tool driller. Superior wages if you can qualify. Steady work guaranteed.
Box 0427

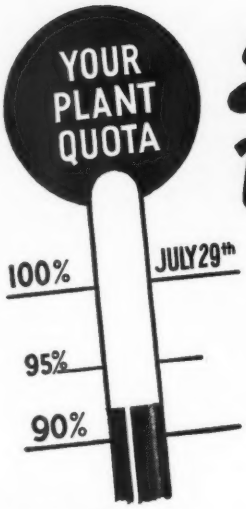
Experienced well drillers for year round permanent work in central Florida. $1.00 per hour and time and one half for over time. Write or wire.

Libby and Freeman
711 West Church St.
Orlando, Florida

# 36,000 Pumps Shipped in '43

ACCORDING to a War Production Board release, nearly 36,000 contractors' pumps were shipped during 1943 which was almost two and one-half times the number shipped in 1937, the earliest year for which comparable data are available. Shipments of centrifugal pumps in 1941, due to increased military requirements, more than doubled the four year (1937-1940) average of almost 12,000 and in 1943 rose again by 37 per cent over the 1941 total. The other types (diaphragm, triplex, plunger) showed comparable increases up to 1941 but declined slightly in 1943. Unfilled orders for centrifugal pumps during the period December 31, 1942 - December 31, 1943, remained fairly stable. At the end of 1943 unfilled orders for the other types of pumps were nearly 50 per cent greater than the shipments for that year.

Release of quarterly shipments and orders figures on contractors' pumps is in line with the War Production Board's policy of wider dissemination of data which industry can use in business analysis and business planning.




# Stay at Your Battle Stations!

**MANAGEMENT • LABOR**

—The 5th War Loan Drive is still on. July 29th is the last payday in the drive.

The U. S. Treasury has set the overall goal at $16,000,000,000-$6,000,000,000 from individuals alone. This is the biggest sum ever asked of the American people—*and it must be raised!*

Keep fighting. Tighten up your 5th War Loan Drive organization. Step up your solicitation tempo. Drive! Drive!! Drive!!! Hit your Plant Quota's 100% mark with a bang that'll proclaim to all the world that the U. S. Home Front is solidly in back of the Fighting Front.

Need help? Need ideas? Call on the Chairman of your War Finance Committee.

## Here's the Quota Plan:

1. Plant quotas are to be established on the basis of an *average* $100 *cash* (not maturity value) purchase per employee.
2. Regular Payroll Savings deductions made during the drive accounting period will be credited toward the plant quota.
3. Employees are expected to contribute toward raising the cash quota by buying extra 5th War Loan Bonds: 1—Outright by cash. 2—By extra installment deductions. 3—By extra installment deductions plus cash.

*Example:* **JOHN DOE Mfg. Co.** —1,000 Employees
1,000 employees x $100=$100,000 Cash Quota

| | |
|---|---|
| Regular Payroll deductions during the eight weekly payroll Accounting Periods of June and July. | 30,000 |
| | $70,000 (to be raised by sales of extra Bonds) |

**BACK THE ATTACK—SELL MORE THAN BEFORE**

*The Treasury Department acknowledges with appreciation the publication of this message by*

**The Driller**

*This is an official U.S. Treasury adv.—prepared under the auspices of Treasury Department and War Adv. Council*

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*A journal for water well drillers*

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